

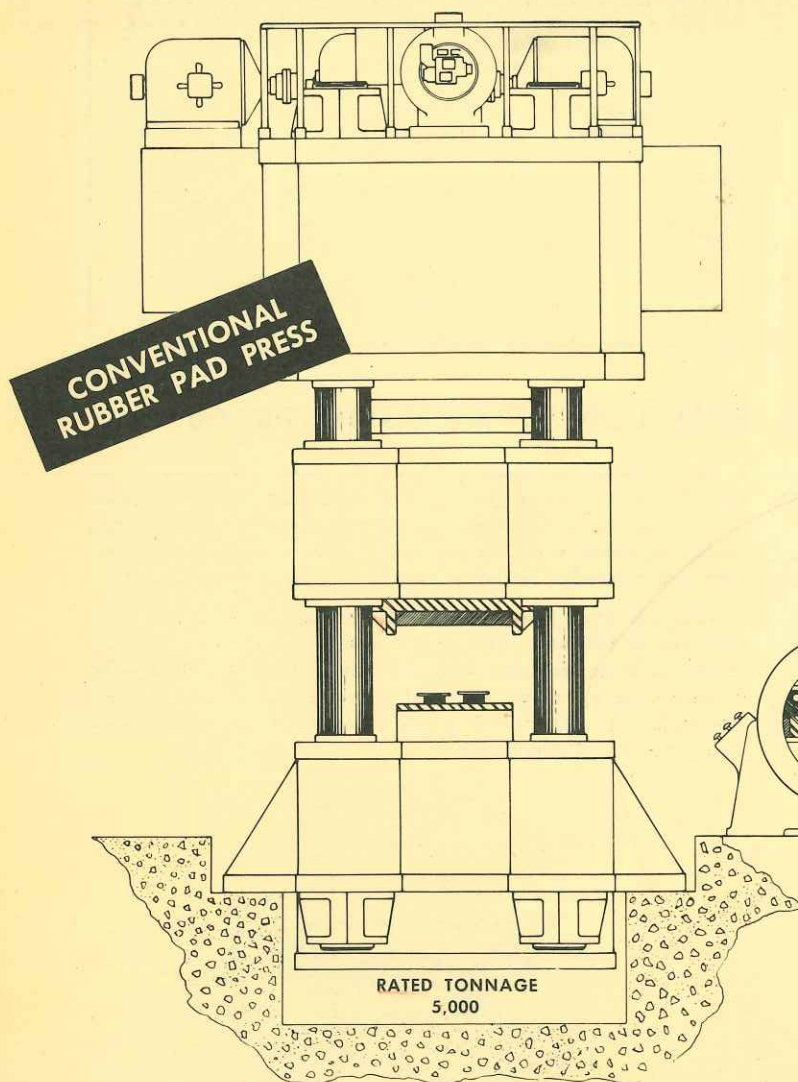
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TRADE **Verson** MARK

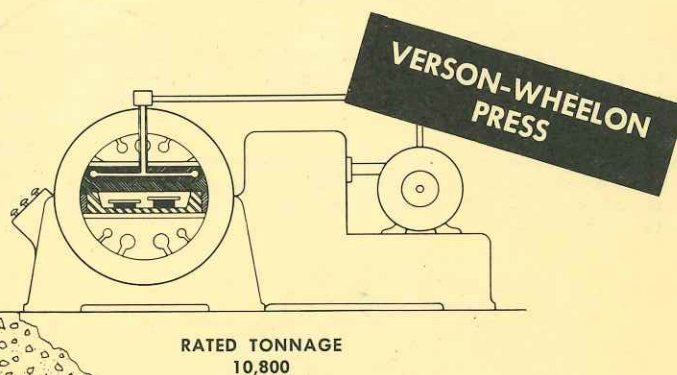
Wheelon

**Direct Acting
HYDRAULIC PRESSES**

*... a revolutionary new method
of rubber pad forming*



- Comparative drawings to scale of a conventional rubber pad press and the new Verson-Wheelon press. In spite of its much smaller size and lower cost, the Verson-Wheelon unit performs the same type of jobs as the bigger machine in a much superior manner.



VERSON ALLSTEEL PRESS CO.

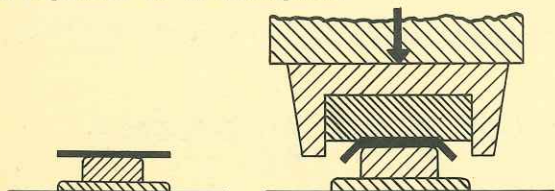
9300 S. Kenwood Ave., Chicago 19, Illinois

• So. Lamar at Ledbetter Dr., Dallas, Texas

TRADE

Verson MARK**--Wheelon DIRECT***bring new standards of simplicity, e***THE DEVELOPMENT OF RUBBER PAD FORMING**

THE Rubber Pad forming process (Guerin) has been the greatest single contribution to the manufacture of the all-metal airplane. Its development by Douglas Aircraft Company in 1935 was an important factor in the economic success of modern aircraft. The universal adoption of this method of forming sheet metal has proven the wisdom and foresight of those men responsible for its development.



1. The sheet metal blank is placed over a simple form block.

2. A rubber pad in a suitable container is forced down over the work with sufficient pressure to make the sheet metal blank conform as closely as possible to the form block.

The principle of Rubber Pad forming is simple.

The advantages of this method are:

1. The tooling is a simple male form block that is inexpensive and easy to make and relatively easy to rework.
2. Since the form block does not have to be accurately located with respect to a mating die, there is no set-up time.

The disadvantages arising in conventional low pressure rubber pad forming are:

1. Most parts are incompletely formed.
2. With incomplete forming from the press, a great deal of hand work has always been required to complete the part.

The single acting hydraulic press initially proved to be the best piece of equipment to adapt to rubber pad forming. A 2,000 ton press would handle a 36 x 96 inch platen with a resulting pad pressure of 920 pounds per square inch.

For the last five years, the increased use of heavier gages had been apparent. Thin wing jet aircraft have made the use of .125, .188, and even .250 inch sheet and plate common for heavily loaded ribs and frames. Some manufacturers reduced the platen size in order to raise the unit pressure. To be able to form sufficiently large parts at the desired pressures would require presses of tremendous size and cost.

It became apparent that there should be a sounder and more economical method of obtaining these higher pressures, together with large bed areas. The idea of displacing the rubber pad by direct hydraulic pressure appeared promising, and a study of the structure and possible cost showed the potential economy. Douglas Aircraft Company decided to proceed with the prototype press.

The Prototype Press is in operation on production parts at the Santa Monica plant of the Douglas Aircraft Company.

PRINCIPLE OF THE Verson-WHEELON HYDRAULIC PRESS

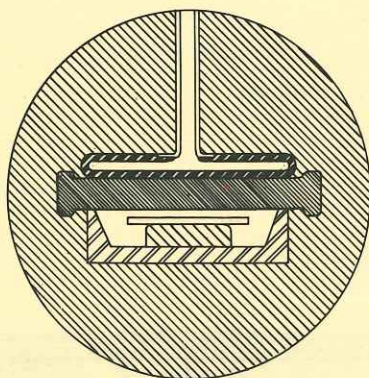
The simplicity of the hydraulic, mechanical, and structural elements of the Verson-Wheelon press makes possible a compact functional design ideally suited to high pressure work.

The bag or fluid cell is mounted in the roof of the press. Inflating the bag with hydraulic fluid displaces the working pad down over the work. Normally the pressure is raised to 5000 pounds per square inch to accomplish the actual forming. Lower pressures may be used, however.

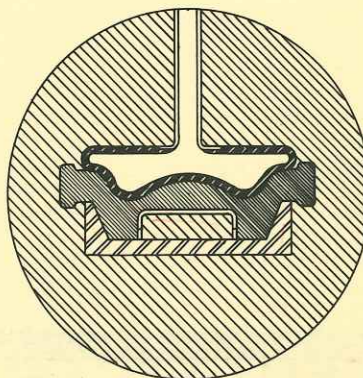
The working pad is softer and has considerably more elongation than those employed in conventional rubber pad presses. In this way, pressures on the side of the block are as high as those on the face of the block.

To protect the working pad from the sharp raw edges of the work, auxiliary throw pads are recommended. The throw pads are preferably hard and serve to prevent the rubber from getting under the edges of the flanges, etc. It is only by maintaining this pressure differential in that work that forming is accomplished.

With this type of press there is no tendency to pierce a hole in the pad as has been done in the past when forcing a six inch block into a six inch pad of rubber. Due to the design there is no finite clearance through which the rubber extrudes as in the conventional pad container. It is this action which chews the edges of a pad in a Guerin press.



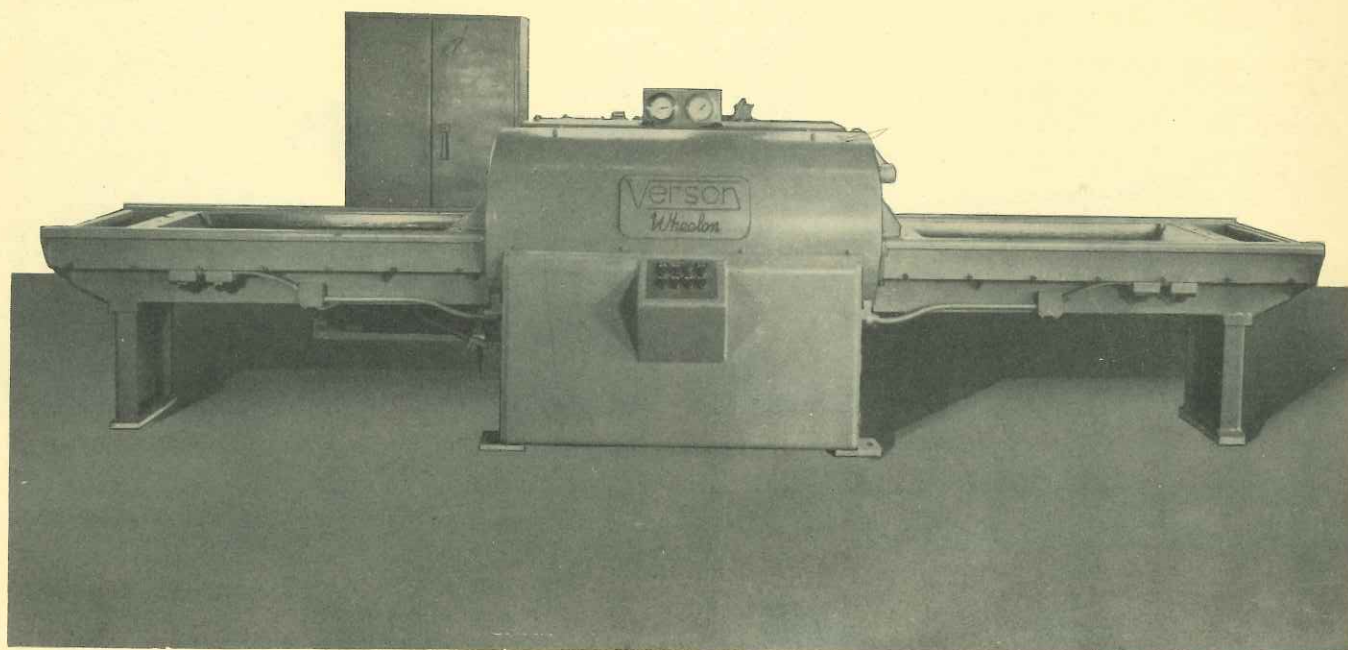
Blank inserted in Verson-Wheelon Press.



Forming under pressure in the Verson Wheelon Press.

ACTING HYDRAULIC PRESSES

economy and efficiency to rubber pad forming



Verson-Wheelon press rated at 2500 tons. Operating pressure is 5000 psi. Tray size is 20" x 50".

ADVANTAGES—

The simplicity of design and comparatively small size of the Verson-Wheelon unit produces several obvious advantages:

1. Cost —

A careful analysis of the prototype actual costs has shown many improvements and economies. Under average present day conditions a Verson-Wheelon press of 10,000 tons capacity can be purchased for approximately 60% of the cost of a 5000 ton conventional rubber pad forming press.

2. Construction —

The construction is simple and uses steel throughout.

3. Simplicity of Installation and Mobility —

The need for expensive foundations is eliminated. This allows ready relocation as plant layout may require.

4. Economy of Plant Space —

Floor space required is at a minimum. Also, the press does not require excessive ceiling height—an eight foot ceiling is usually adequate. The maximum ceiling for the largest size will be 10 feet.

5. Flexibility —

The press is adaptable to duplex fast acting trays, automatic controls, and interlocks. The press is well suited for high production and is the standard model offered. A single manual tray well suited for die tryout and experimental work is also offered.

Automatic quadruple trays will be available for high production, large loading area machines, as a special feature.

STANDARD SIZES—

The following sizes are furnished as standard machines:

WIDTH	LENGTH	OPERATING PRESSURE	RATED TONNAGE
20"	50"	5000 P.S.I.	2500
20"	50"	7500 P.S.I.	3750
30"	96"	7500 P.S.I.	10,800
36"	120"	5000 P.S.I.	10,800
36"	120"	7500 P.S.I.	16,200
50"	120"	5000 P.S.I.	15,000
50"	168"	5000 P.S.I.	21,000

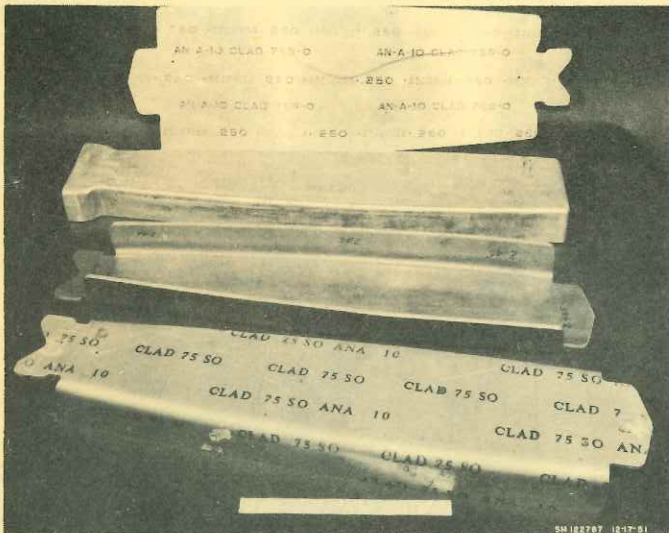
Above machines are available as special in increments of plus or minus 24 inches in length.

The press was developed primarily to produce deeper flanges in heavier parts than was possible in conventional rubber pad presses. One of the trays is arranged with a removable drop center section increasing the maximum depth to accommodate crowned longerons, deep channels, etc.

*1006
5000
2000/5000000
2,500*

TYPICAL PIECES

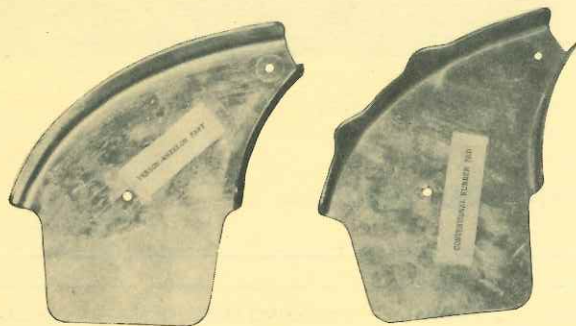
produced on **VERSION-WHEELON** *presses*



An example of heavy gage metal forming on the Verson-Wheelon Direct Acting Hydraulic Press. Top to bottom: (1) the metal blank pre-cut from quarter-inch 75S aluminum alloy; (2) the Kirksite form flock; (3) and (4) bottom and top views of the part formed by the VERSION Wheelon Press.



Detailed close-up of the heavy-gage part shown at the left illustrates the double break of the flange obtained through effective side pressure obtained by the Verson Wheelon Press. It is this feature which reduces the amount of hand forming usually required after conventional rubber-pad pressing.



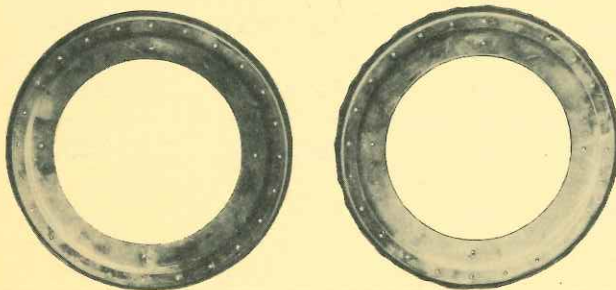
Verson-Wheelon

Conventional Rubber Pad



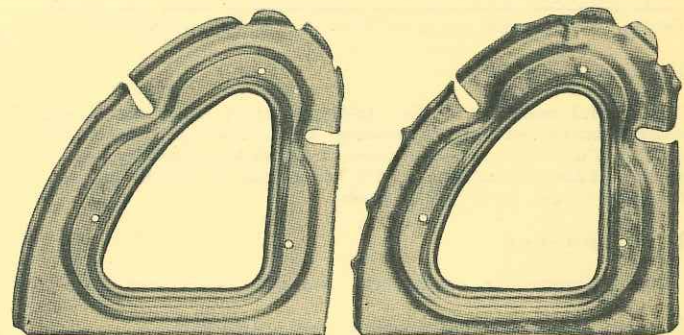
Verson-Wheelon

Conventional Rubber Pad



Verson-Wheelon

Conventional Rubber Pad



Verson-Wheelon

Conventional Rubber Pad

Comparison of typical pieces as formed in the Verson-Wheelon press and a conventional rubber pad press. Note the better flanging and absence of wrinkles in the Verson-Wheelon formed parts.

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